CLAIMS

1. A lateral maneuverability map for a vehicle, characterized in that it represents, within an area of movement, the contours of regions (51) of complete freedom of lateral movement for the vehicle, taking into account the maneuvering capabilities of the vehicle and the need for the vehicle to avoid regions (50) arbitrarily considered as nonnegotiable.

2. The map as claimed in claim 1, characterized in that it is added, as a transparent overlay, to a map delivered by a navigation system.

3. The map as claimed in claim 2, designed for a vehicle consisting of an aircraft provided with a system for preventing the risk of collision with the ground, which delivers a ground collision risk map, characterized in that it is added, as a transparent overlay, to the ground collision risk map.

4. The map as claimed in claim 2, characterized in that it is added, as a transparent overlay, to a map delivered by a navigation system, the regions of complete freedom of lateral movement appearing by semitransparent masking.

5. The map as claimed in claim 2, characterized in that it is added as a transparent overlay, to a map delivered by a navigation system, the regions of complete freedom of lateral movement appearing by masking using textures.

6. The map as claimed in claim 1, characterized in that it represents, within an area of movement, various types (50, 51, 52) of regions distinguished from each other by the possibility of the vehicle to negotiate them or not and, for the types of negotiable regions (51, 52) by the extent of the lateral maneuvering

freedom left to the vehicle owing to its maneuvering capabilities and to the need for it to avoid the nonnegotiable areas (50).

7. The map as claimed in claim 6, characterized in that the regions represented are at least of three separate types: a first type (50) corresponding to the nonnegotiable regions, a second type (52) corresponding to bands surrounding the nonnegotiable regions and having the width of a maneuver space considered as necessary for a free lateral movement of the vehicle, and a third type (51) corresponding to regions of free movement.

8. The map as claimed in claim 6, characterized in that the various types (50, 51, 52) of regions are represented in false colors.

9. The map as claimed in claim 6, characterized in that the various types (50, 51, 52) of regions are represented by different textures.

10. The map as claimed in claim 6, characterized in that at least one of the second (52) and third (51) types of region is represented with iso-distance lines with respect to the borders of the regions to be circumvented.

11. The map as claimed in claim 6, characterized in that at least one of the second (52) and third (51) types of region is represented with color gradations representative of distances from the borders of the regions to be circumvented.

12. The map as claimed in claim 7, characterized in that the width of the bands (52) constituting the second type of region takes into account the instantaneous performance of the aircraft.

13. The map as claimed in claim 7, characterized in that the width of the bands (52) constituting the second type of region takes into account the flight envelope of the aircraft.

14. The map as claimed in claim 7, characterized in that the width Sd of the bands (52) constituting the second type of region is determined by applying the equation:

$$Sd = HLD\_M + HLD\_T + \sqrt{\left(\frac{HLD\_L}{2}\right)^2 + HLD\_T^2}$$

HLD_M being a safety margin;

HLD_L being a configuration datum defined in terms of flight time or distance traveled over the ground;

HLD_T being a turning radius corresponding to the equation:

$$HLD\_T = \frac{GS^2}{g \times \tan(HLD\_B)}$$

g being the gravitational acceleration;

GS being the ground speed of the aircraft; and

HLD_B being the maximum value permitted for the roll angle adopted by the aircraft when turning.

15. A method of obtaining a map as claimed in claim 1, characterized in that it comprises the following steps:

- generation, from knowledge of the regions considered as nonnegotiable and to be circumvented, and of elements of a database of elevations of the terrain covering the area of movement, of a distance map (figure 4) covering the area of movement of the vehicle to be mapped and giving the distances from its external points to the regions to be circumvented, relative to the borders of the regions to be circumvented;

- assembly (figure 5) as regions of complete freedom of lateral movement, of connex points, the distances from which, provided by the distance map, are greater than a threshold arbitrarily considered as necessary for free lateral movement of the vehicle; and

- representation (figure 5) of the contours of these regions of complete freedom of lateral movement.

16. The method of obtaining a map as claimed in claim 6, characterized in that it comprises the following steps:

- generation, from knowledge of the regions considered as nonnegotiable and to be circumvented, and of elements of a database of elevations of the terrain covering the area of movement, of a distance map (figure 4) covering the area of movement of the vehicle to be mapped and giving the distances from its external points to the regions to be circumvented, relative to the borders of the regions to be circumvented;

- considering the regions to be circumvented as a first type of region, assembly (figure 5) in regions of a second type, of the connex points whose distances provided by the distance map are less than a threshold arbitrarily considered as necessary for free lateral movement of the vehicle, and in regions of a third type of the connex points whose distances provided by the distance map are greater than said threshold; and

- representation (figure 5) of the area of movement in the form of a subdivision into these three types of region.

17. The method as claimed in claim 15 or claim 16, characterized in that the distance map is obtained by means of a chamfer distance transform.

18. The method as claimed in claim 15 or claim 16, characterized in that the distances mentioned in the distance map are used to plot the lines of iso-distance from the borders of the nonnegotiable regions.